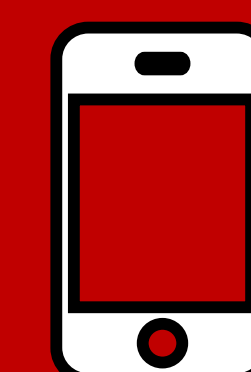




WEED CONTROL, CLOVER INJURY, AND RESULTING YIELD FROM GF-3731 IN ROTATIONALLY GRAZED PASTURES

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KEY FINDING: GF-3731 broadcasted in spring controlled common broadleaf weeds in grass-clover mixed pastures with limited impact to white clover cover and biomass.

Introduction

- GF-3731 (florpyrauxifen-benzyl and 2,4-D) is a new product being developed for broadleaf weed control in pastures.
- Little information is available on weed control, injury to clover, and resulting forage yield in rotationally grazed pastures.

Objective: Determine the effectiveness of a broadcasted application of GF-3731 in spring on weed and forage species cover and resulting biomass in rotationally grazed cool-season grass-clover mixed swards.

Material and Methods

- Randomized complete block design (4 reps) in two pastures in WI (2019).
 - ❖ Lancaster (LARS) and Prairie Du Sac (PDS)
 - ❖ GF-3731 was broadcasted at 1.75 L ha⁻¹ (24 fl oz A⁻¹) (LARS 6/1; PDS 5/7) and compared to an untreated control.
- Measurements
 - ❖ Percent cover (100 pts/plot) and biomass (3-0.25m² quadrats/plot) collected prior to each grazing event
 - ❖ Total of 3 grazing events (every 25-30 d) at each location.
 - ❖ Plant classes separation (clover, p. grasses and broadleaf weeds).
- Statistics
 - ❖ Mixed-effects models with herbicide treatment as a fixed effect and site and block as random effects.
 - ❖ Treatments were considered different when $P \leq 0.05$.
 - ❖ Data were transformed to stabilize error variances when necessary, but original values are reported.

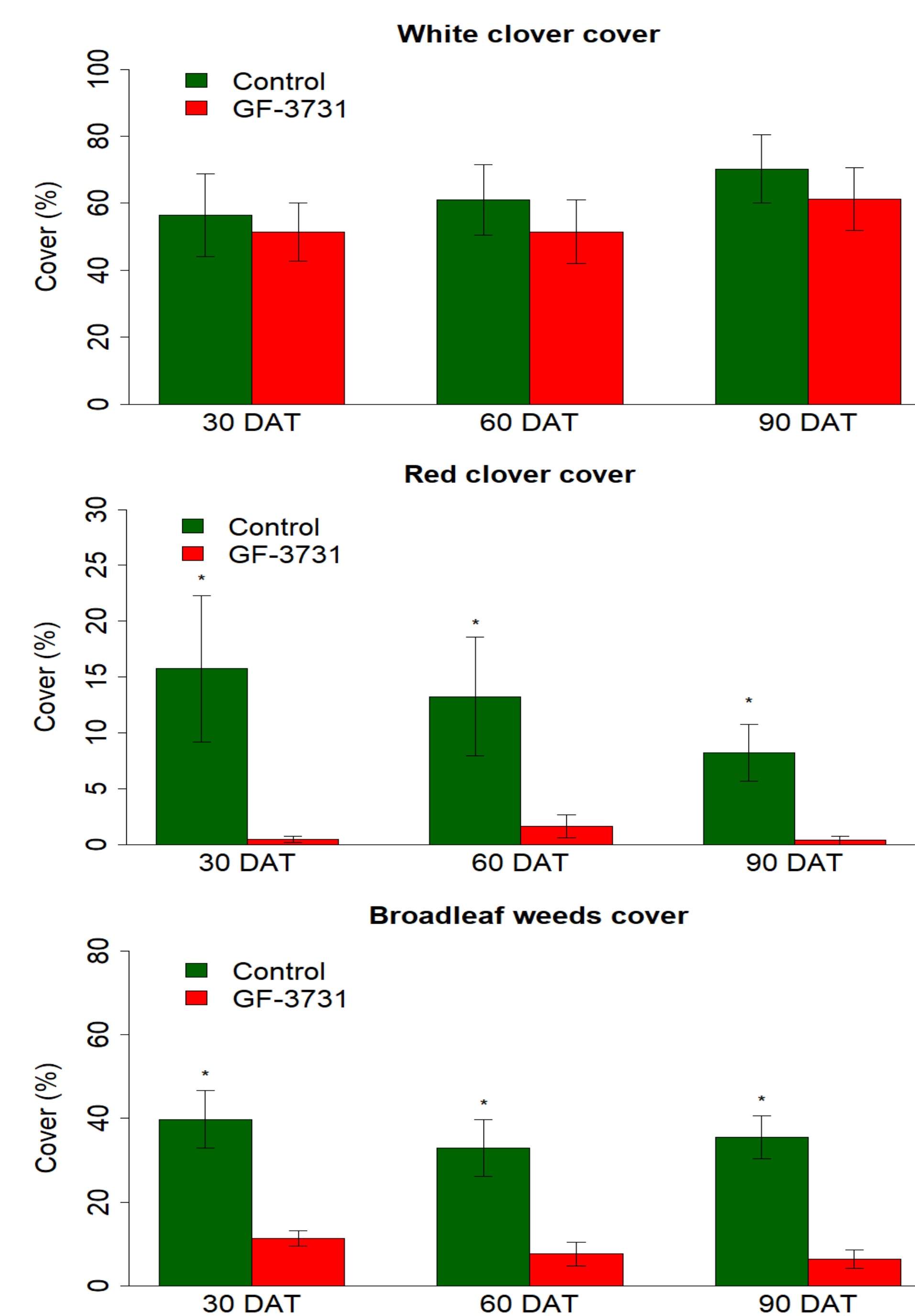


Figure 1. Pasture at PDS (A) and LARS (B).

Table 1. Plant species > 5 % cover at each location.

Classes	Lancaster	Prairie Du Sac
Clover	Red clover (<i>Trifolium pretense</i>) and white clover (<i>Trifolium repens</i>)	
Perennial grasses	Tall fescue (<i>Lolium arundinaceum</i> S.), orchard grass (<i>Dactylis glomerata</i> L.) and smooth brome (<i>Bromus inermis</i> L.)	
Broadleaf weeds	Dandelion (<i>Taraxacum officinale</i>), Canada thistle (<i>Cirsium arvense</i>) and burdock (<i>Arctium spp.</i>)	Dandelion, plumeless thistle (<i>Carduus acanthoides</i>)

Vegetative cover responses (%)



Results

- White clover cover was not impacted by GF-3731 as it was similar to untreated pastures 30, 60 and 90 DAT.
- Red clover cover was reduced to $\leq 2\%$ cover by GF-3731 30, 60 and 90 DAT.
- Clover biomass (white + red) was three-fold greater on untreated pastures at 30 DAT, but no differences were detected at 60 and 90 DAT.
- GF-3731 controlled broadleaf weeds, resulting in 5.0-fold lower total season broadleaf biomass production.

Biomass responses (kg DM ha⁻¹)

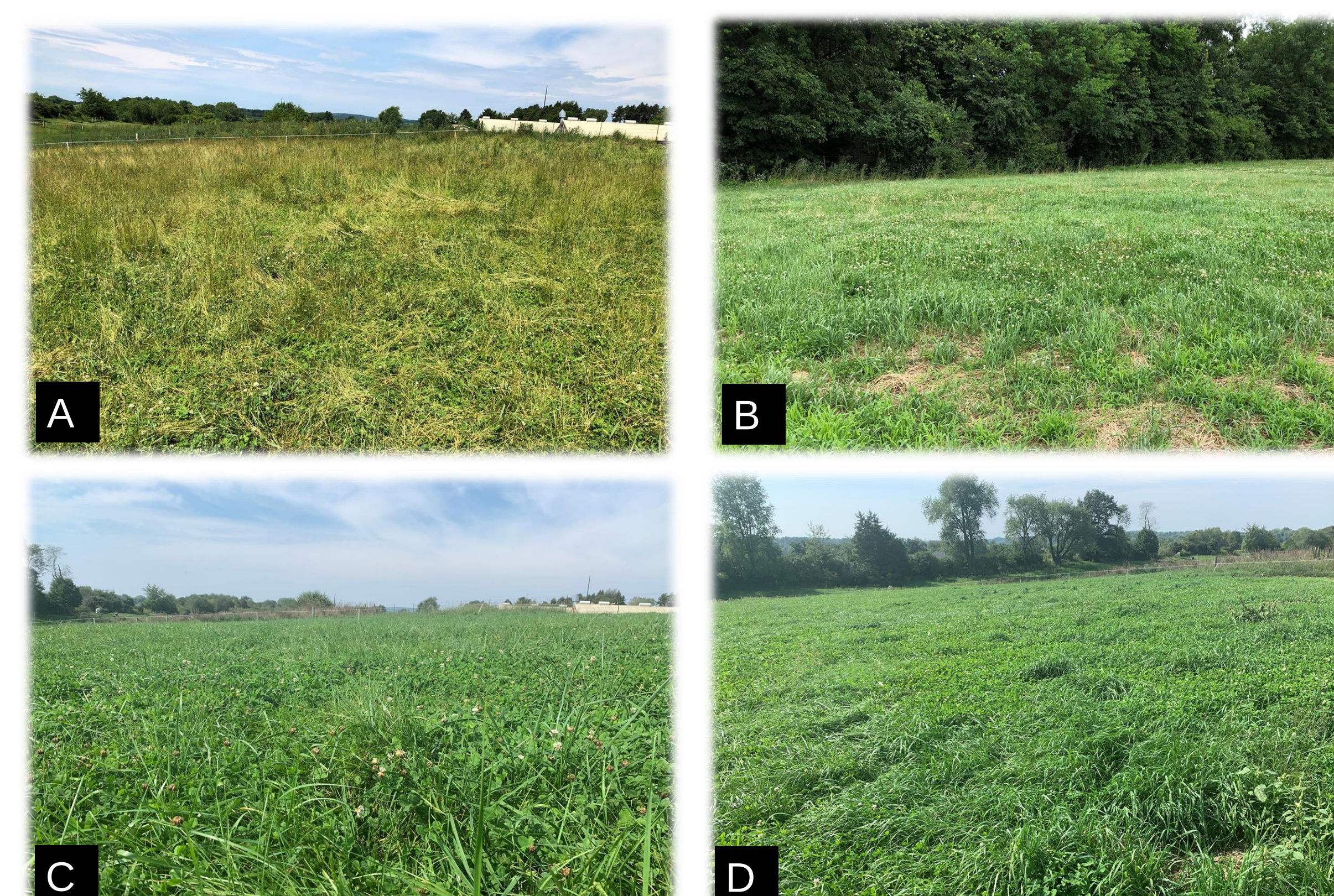
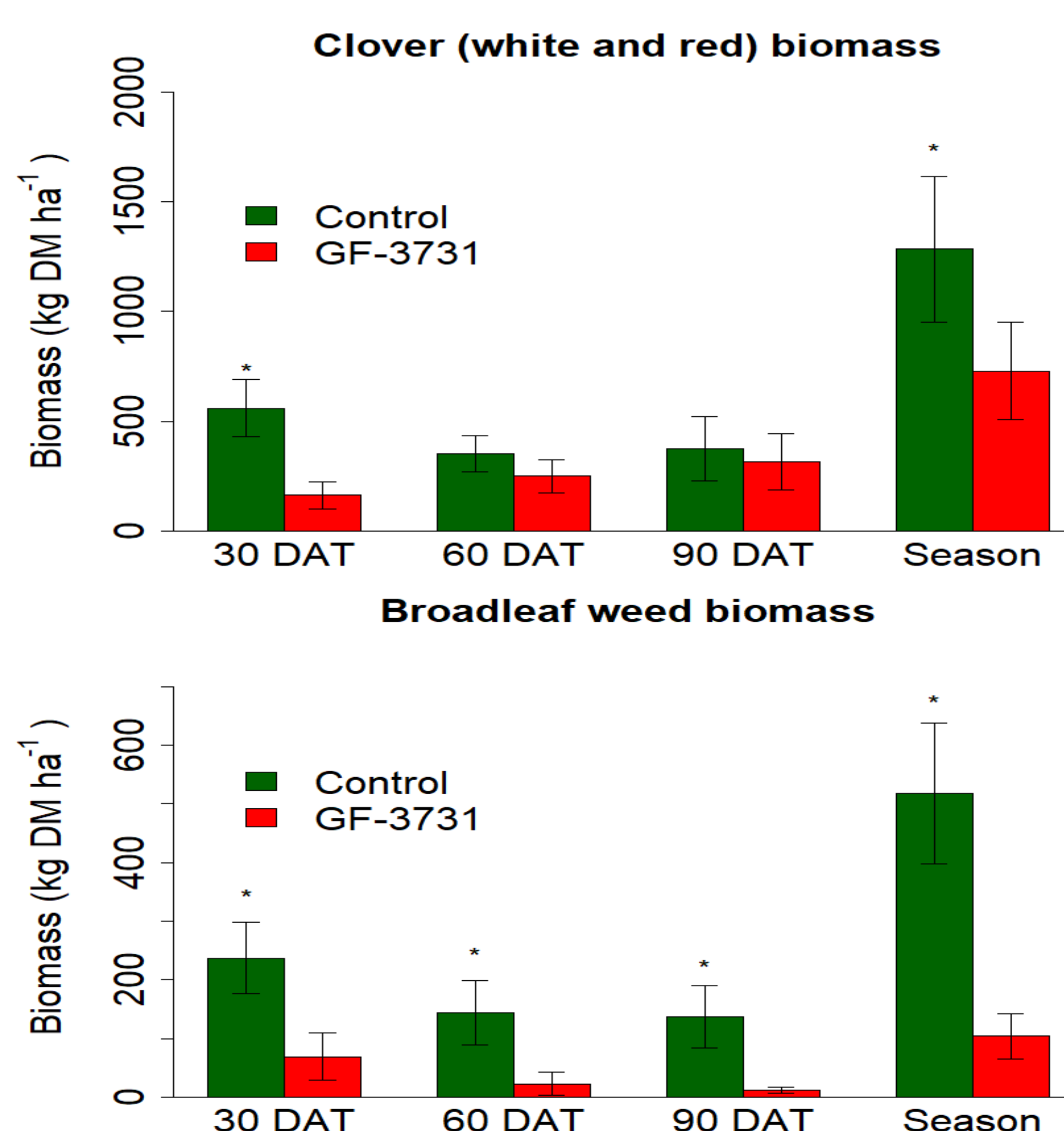


Figure 3. Treated pastures 30 (A), 60 (B) and 90 DAT (C and D) at PDS.

Conclusions

- GF-3731 treated pastures maintained significant white clover cover and biomass while reducing broadleaf weeds compared to untreated plots.
- Different tolerances were observed among clover species as red clover cover was reduced to $\leq 2\%$ on treated pastures through 90 DAT.
- Future research should investigate the susceptibility of different clover species to GF-3731 and management practices to limit injury of susceptible clovers.

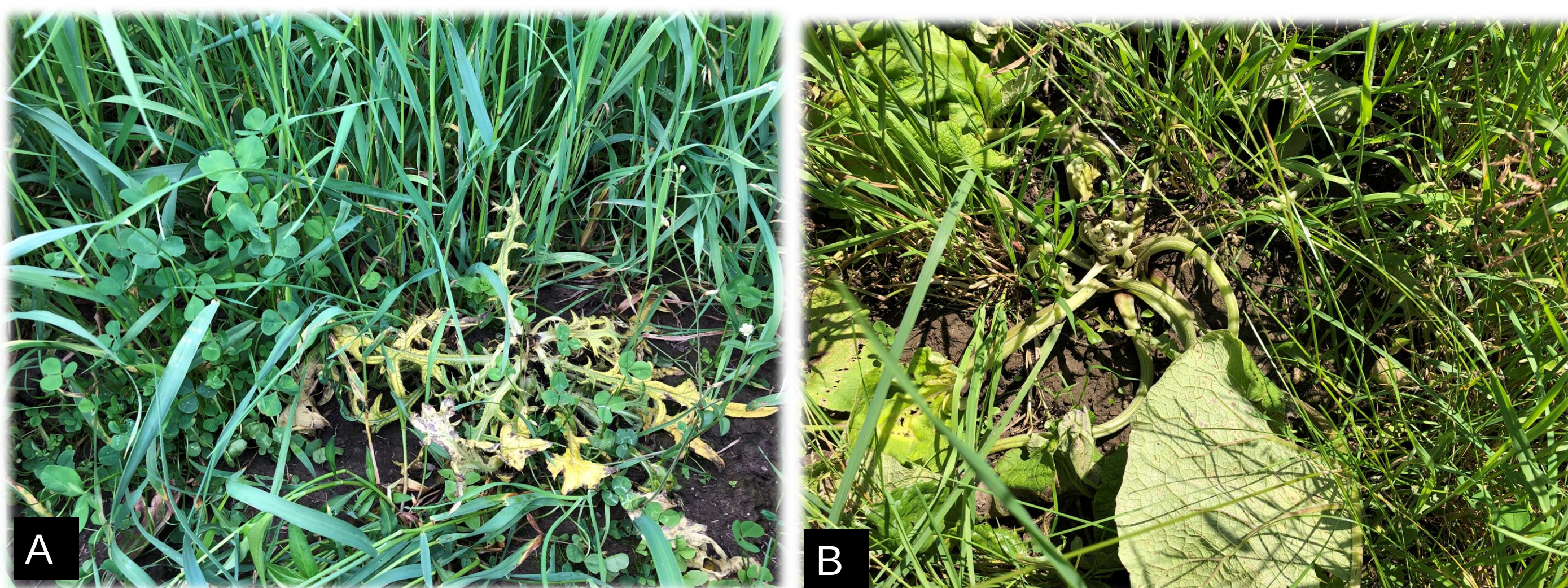


Figure 2. Bull thistle (A) and burdock (B) control 20 DAT at LARS.